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(Rev. 12-29-99)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371**

027566-028

U.S. APPLICATION NO. (if known, see 37 C.F.R. 1.5)

Unassigned 09/831281

INTERNATIONAL APPLICATION NO.
PCT/EP99/08591

INTERNATIONAL FILING DATE
9 November 1999

PRIORITY DATE CLAIMED
10 November 1998

TITLE OF INVENTION
SECURITY IN TELECOMMUNICATIONS NETWORK GATEWAYS

APPLICANT(S) FOR DO/EO/US
Leslie GRAF, Ian RYTINA, and Mark HOLLIS

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and the PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
- ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
- ☐ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
- ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
 ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:

Unexecuted Declaration, Preliminary Examination Report, PCT Demand and PCT Request

U.S. APPLICATION NO (If known) (37 CFR 1.52) Unassigned		INTERNATIONAL APPLICATION NO PCT/EP 99/08591		ATTORNEY'S DOCKET NUMBER 027566-028	
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09/831281

17. <input checked="" type="checkbox"/> The following fees are submitted:				CALCULATIONS		PTO USE ONLY	
Basic National Fee (37 CFR 1.492(a)(1)-(5)): Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1,000.00 (960) International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$860.00 (970) International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$710.00 (958) International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$690.00 (956) International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00 (962)							
ENTER APPROPRIATE BASIC FEE AMOUNT =						\$ 860.00	
Surcharge of \$130.00 (154) for furnishing the oath or declaration later than 20 <input type="checkbox"/> 30 <input type="checkbox"/> months from the earliest claimed priority date (37 CFR 1.492(e)).				\$ ---			
Claims	Number Filed	Number Extra	Rate				
Total Claims	9 -20 =	0	X\$18.00 (966)	\$ - 0 -			
Independent Claims	2 -3 =	0	X\$80.00 (964)	\$ - 0 -			
Multiple dependent claim(s) (if applicable)			+ \$270.00 (968)	\$ ---			
TOTAL OF ABOVE CALCULATIONS =				\$ 860.00			
Reduction for 1/2 for filing by small entity, if applicable (see below).				\$ ---			
SUBTOTAL =				\$ 860.00			
Processing fee of \$130.00 (156) for furnishing the English translation later than 20 <input type="checkbox"/> 30 <input type="checkbox"/> months from the earliest claimed priority date (37 CFR 1.492(f)).				\$ ---			
TOTAL NATIONAL FEE =				\$ 860.00			
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 (581) per property +				\$ ---			
TOTAL FEES ENCLOSED =				\$ 860.00			
				Amount to be: refunded \$			
				charged \$			

a. ☐ Small entity status is hereby claimed.

b. ☒ A check in the amount of \$ 860.00 to cover the above fees is enclosed.

c. ☐ Please charge my Deposit Account No. 02-4800 in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

d. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 02-4800. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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SIGNATURE

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43,420

REGISTRATION NUMBER

09/831281

JC08 Rec'd PCT/PTO 09 MAY 2001

Attorney's Docket No. 027566-028

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of)
Leslie GRAF et al.) Group Art Unit: UNASSIGNED
Application No.: UNASSIGNED) Examiner: UNASSIGNED
Filed: May 9, 2001)
For: SECURITY IN TELECOMMUNICATIONS)
NETWORK GATEWAYS)

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination, please amend the above-identified application as follows:

IN THE CLAIMS:

Please replace claims 3-8 as follows.

3. (Amended) A method according to claim 1, wherein the telecommunication network comprises a Signalling System No. 7 (SS7) based signalling network which is interfaced to the ISP via the signalling gateway.

4. (Amended) A method according to claim 3, wherein the network coupling the signalling gateway to the ISP is an IP based network.

5. (Amended) A method according to claim 4, wherein the signalling gateway provides a conversion between at least the Message Transfer Part protocols of the SS7 network and the IP based protocols enabling ISUP messages to be transferred, transparently, between the exchange and the ISP.

6. (Amended) A method according to claim 4, wherein the ISP from which a signalling message originates is identified at the signalling gateway by virtue of the source IP address associated with the IP datagram in which the message is delivered to the gateway.

7. (Amended) A method according to claim 4, wherein each of the ISPs connected to a given signalling gateway is allocated a unique Point Code in the signalling network of the telecommunications network, Point Codes being included in the header of a signalling message to indicate the destination and source of the message, and the signalling gateway screens messages received from an ISP to confirm that the source Point Codes contained therein correspond to the actual ISPs from which they originated.

8. (Amended) A method according to claim 4, wherein the ISP from which a signalling message originates is identified by virtue of the input port/device of the signalling gateway at which the message arrives.

REMARKS

The Examiner's attention is drawn to the amendments to the application made in the Preliminary Examination Report, and for the convenience of the Examiner the following items are submitted with this application.

- A) International PCT Publication
- B) Preliminary Examination Report
- C) PCT Demand
- D) PCT Request

The above changes to the claims have been made to delete multiple dependency of the claims, to round out the scope of patent protection being sought, and generally to place the claims in better condition for examination on the merits. These changes have been made in accordance with 37 C.F.R. § 1.121 as amended on November 7, 2000.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

By: _____

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Date: May 9, 2001

Attachment to Preliminary Amendment dated May 9, 2001

Marked-up claims 3-8

3. (Amended) A method according to claim 1 [or 2], wherein the telecommunication network comprises a Signalling System No. 7 (SS7) based signalling network which is interfaced to the ISP via the signalling gateway.

4. (Amended) A method according to claim 3, [any one of the preceding claims] wherein the network coupling the signalling gateway to the ISP is an IP based network.

5. (Amended) A method according to claim 4, [when appended to claim 3] wherein the signalling gateway provides a conversion between at least the Message Transfer Part protocols of the SS7 network and the IP based protocols enabling ISUP messages to be transferred, transparently, between the exchange and the ISP.

6. (Amended) A method according to claim 4, [or 5] wherein the ISP from which a signalling message originates is identified at the signalling gateway by virtue of the source IP address associated with the IP datagram in which the message is delivered to the gateway.

7. (Amended) A method according to claim 4, [3 or to anyone of claims 4 to 6 when appended to claim 3] wherein each of the ISPs connected to a given signalling gateway is allocated a unique Point Code in the signalling network of the telecommunications network, Point Codes being included in the header of a signalling message to indicate the destination and source of the message, and the signalling gateway screens messages received from an ISP to confirm that the source Point Codes contained therein correspond to the actual ISPs from which they originated.

8. (Amended) A method according to claim 4, [3 or to any one of claims 4 to 6 when appended to claim 3] wherein the ISP from which a signalling message originates is identified by virtue of the input port/device of the signalling gateway at which the message arrives.

SECURITY IN TELECOMMUNICATIONS NETWORK GATEWAYSField of the Invention

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The present invention relates to security in telecommunications networks and in particular to a method and apparatus for preventing one Internet Access
8 Provider from interfering with telephone circuits allocated to another Internet Access Provider by a common telecommunications network operator.

12 Background to the Invention

At the present time, in order to access the Internet, a user typically has to make a connection (possibly via a
16 modem) to a local telephone exchange of a telecom operator. The exchange then sets-up a circuit switched connection between the user and an input device of an Internet Service Provider (ISP) identified by a
20 telephone number (B-number) dialled by the user. In some cases, the connection may be routed via one or more intermediate exchanges. In either case, the telephone network treats the connection as it would any normal
24 telephone-to-telephone connection, i.e. it is not aware that the connection serves as an Internet access connection.

28 The European Telecommunications Standards Institute (ETSI) has recently established a project under the acronym TIPHON (Telecommunications and Internet Protocol Harmonisation Over Networks) to support the market for
32 voice communication and related voiceband communication (e.g. facsimile) between users connected to both circuit switched networks and IP based networks. As part of TIPHON, it has been proposed to more closely integrate
36 the ISPs into the telecommunications networks and in particular to provide for the exchange of signalling

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information between ISPs and the exchanges of telecommunications networks, for the purpose of setting up and managing the circuit switched connections between exchanges and the input devices of the ISPs.

The current TIPHON proposal provides for a signalling gateway which acts as the interface between the signalling network of the telecom operator and the ISP. It is expected that the signalling network of the telecom operator will typically be a Signalling System No.7 (SS7) network which carries messages of the ISDN User Part (ISUP) protocol, whilst communications between the signalling gateway and the ISP are expected to be carried over an IP network. One of the roles of the signalling gateway is therefore to seamlessly relay ISUP messages from the Time Division Multiple Access (TDMA) SS7 network to the ISP over the packet switched IP network, and vice versa. The signalling gateway is generally referred to as an SS7/IP gateway.

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It is likely that the SS7/IP gateways will be under the control of the telecom network operator, and that a single gateway may provide a signalling interface to the telecom network for a plurality of independently operated ISPs.

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Summary of the Present Invention

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The inventors of the present invention have discovered that under the current TIPHON proposals it is possible for an ISP connected to an SS7/IP gateway to interfere with the control of another ISP, and in particular with circuits allocated to that other ISP, connected to the same SS7/IP gateway.

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Preferably, a record is maintained at the signalling gateway, of the circuit switched communication channels allocated to each ISP coupled to the signalling gateway.

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Preferably, the telecommunication network comprises a Signalling System No.7 (SS7) based signalling network which is interfaced to the ISP via the signalling gateway. More preferably, the network coupling the signalling gateway to the ISP is an IP based network, such that the signalling gateway provides a conversion between at least the Message Transfer Part protocols (i.e. said first transmission protocol) of the SS7 network and the IP based protocols. This arrangement allows ISUP messages to be transferred, transparently, between the exchange and the ISP.

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In certain embodiments of the invention, the ISP from which a signalling message originates is identified at the signalling gateway by virtue of the source IP address associated with the IP datagram in which the message is delivered to the gateway. Typically, each ISP coupled to the signalling gateway is allocated a unique IP address. The signalling gateway maintains a record of those circuits which are allocated to a given ISP/IP address.

In other embodiments of the invention, each of the ISPs connected to a given signalling gateway is allocated a unique Point Code in the signalling network of the telecommunications network, Point Codes being included in the header of a signalling message to indicate the destination and source of the message. The signalling gateway screens messages received from an ISP to confirm that the source Point Codes contained therein correspond to the actual ISPs from which they originated. Again, the originating ISP for a message may be identified on

the basis of the source IP address of the message containing datagram.

- 4 In other embodiments of the invention, the ISP from which a signalling message originates is identified by virtue of the input port/device of the signalling gateway at which the message. Thus input port/device
8 identity may be used as an alternative to the source ISP IP address.

- According to a second aspect of the present invention
12 there is provided apparatus for transferring signalling messages between an Internet Service Provider (ISP) and an exchange of a telecommunications network for the purpose of allocating and controlling circuit switched
16 communication channels between the exchange and the ISP, the apparatus comprising a signalling gateway coupled between a signalling network of a telecommunications network and a network connected to an Internet Service
20 Provider (ISP) and arranged to:

- convert messages between a first transmission protocol used in the telecommunications network and a second transmission protocol used in the network which
24 connects the signalling gateway to the ISP; and

- for each message received at the signalling gateway from the ISP, to confirm the right of that ISP to control a circuit switched communication channel
28 identified in the message.

Brief Description of the Drawings

- 32 For a better understanding of the present invention and in order to show how the same may be carried into effect reference will now be made, by way of example, to the accompanying drawings, in which:

Figure 1 shows a signalling gateway coupling a signalling network of a telecommunications network to a number of ISPs;

4 Figure 2 illustrates schematically the protocol stacks implemented at the signalling gateway of Figure 1; and

8 Figure 3 is a flow diagram illustrating the method of operation of the signalling gateway of the network of Figure 1.

Detailed Description of Certain Embodiments

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In Figure 1 there is illustrated a subscriber telephone 1 connected to a local access exchange 2 of a telephone network. This network is assumed to be a conventional network employing PSTN, ISDN, or certain other known communication protocols. Within the network, circuit switched channels over which voice or data may be transmitted are set up and controlled using a Signalling System No.7 based signalling network (e.g. CCITT No.7). More particularly, inter-exchange signalling messages carried by the SS7 network conform to the ISDN User Part (ISUP) protocol.

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The present example is concerned with the setting-up and control of a voice communication channel between the telephone network subscriber terminal 1 and a remote terminal (not shown in Figure 1) coupled to the Internet 3. The remote terminal may be for example a multi-media PC connected via a modem and a local access network to the Internet 3, or it may be a telephone network subscriber telephone similar to the telephone 1. In either case, voice data is communicated between the two terminals/telephones over the Internet 3.

36 A number of ISPs 4 are each allocated a large number of circuit switched channels by the access exchange 2, and

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each of these channels has an identification number (CIC) unique to the exchange 2. In order to access the Internet, it is necessary to establish a connection over one of the allocated channels between the subscriber telephone 1 and an Internet interface device 5 (via the access exchange 2) provided by one of the ISPs 4.

The interface device 5 is known in the art as a "Media Gateway" and is arranged to convert voice information received from the telephone 1 into a form suitable for transmission over the Internet (involving for example transcoding, formatting, etc) and to perform the reverse transformation for data received over the Internet and destined for the telephone 1. It is noted that the Media Gateway 5 may communicate with a remote Media Gateway, or with a remote IP terminal, using the ITU multi-media protocol H.323 although this will not be considered here in further detail.

Each ISP 4 has a "Media Controller" 6 which is analogous to a conventional telecommunications network switch, i.e. it is responsible for the general management of Media Gateway resources and in particular for allocating Media Gateways to subscribers (or rather to circuits originating at the access exchange 2).

The Media Controller 6 is arranged to exchange signalling information with a signalling gateway 7, referred to hereinafter as an SS7/IP gateway, which is under the control of the telecommunications network operator and can thus be considered secure from the point of view of the operator. The SS7/IP gateway 7 is connected to the SS7 network and as such is typically allocated a unique Point Code within the visibility area of the SS7 network, which Code provides a destination (and source) address for messages within the network. The physical connection between the Media Controllers 6

and the SS7/IP gateway 7 is provided by an IP network which may be the Internet but which is more probably an intranet having no public access.

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Figure 2 illustrates the communication protocol layers implemented at the SS7/IP gateway 7 in order to allow ISUP messages carried by the SS7 signalling network to be relayed over the IP network to the Media Controllers 6, and vice versa. ISUP messages received at the SS7/IP gateway 7 from the access exchange 2 over the SS7 network are processed through a Message Transfer Part (MTP) layer 8 (see "Understanding Telecommunications", vols. 1 & 2, Studentlitteratur, Lund, Sweden (ISBN 91-44-00214-9)) before being passed to a processing and control part 9. Messages are relayed through this part 9 before being processed by a TCP/IP part 10 to provide IP datagrams suitable for transmission over the IP network to the Media Controllers 6. Messages received at the SS7/IP gateway 7 over the IP network are processed in the reverse direction, with the processing and control part 9 performing an additional message authentication operation as will now be described.

For the purpose of routing datagrams over the IP network between the SS7/gateway 7 and the Media Controllers 6 of the various ISPs 4, each Media Controller 6 is allocated an IP address (unique in that IP network). The IP address allocated to a Media Controller 6 is incorporated into all datagrams sent by that controller 6 to the SS7/IP gateway 7 and enables the SS7/IP gateway 7 to confirm the source of a received packet.

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When a signalling message is received by the SS7/IP gateway 7, the processing and control part 9 identifies the IP address associated with the message. The gateway 7 maintains a record of the IP addresses allocated to the various Media Controllers 6 as well as a record of

the circuits (CICs) allocated to each ISP. Each signalling message contains in its header part the CIC to which the message relates. The processing and control part 9 confirms that the originating ISP 4, identified from the source IP address, is allocated the CIC to which the signalling message relates. If the result is positive, the message is passed to the MTP 8 for relaying to the access exchange 2. If the result is negative, i.e. the signalling message relates to a CIC not allocated to the originating ISP 4, then the message is not relayed further and is discarded. In this event, an error message may be returned to the originating ISP 4 and also possibly to the access exchange 2.

Figure 3 is a flow chart illustrating the message authentication and relay steps performed at the SS7/IP gateway 7 upon receipt of a signalling message from an ISP 4.

It will be appreciated that modifications may be made to the above described embodiment without departing from the scope of the present invention. For example, each Media Controller 6 may be allocated a Point Code in the SS7 network of the telecommunications network. Thus, a Media Controller 6 may be made the destination node for an SS7 message rather than the SS7/IP gateway (although signalling messages are still routed through the SS7/IP gateway). As the Point Code is included in the header of an ISUP message, the SS7/IP gateway 7 may authorise a received signalling message by matching the Point code included in the message header with the source IP address.

Whilst the embodiment described above includes only a single exchange 2 to which the subscriber telephone 1, the SS7/IP gateway 7, and the ISPs 4 are all directly connected, it will be appreciated that this need not be

the case. Indeed, a more likely scenario involves a number of transit exchanges through which signalling data and circuit switched channels are routed. It will
4 also be appreciated that the present invention is not limited to voice communications and is also applicable to general data communications.

8 The above description has also been concerned with the use of ISPs to connect subscribers to the Internet. The present invention may also be employed in connection with ISPs which connect subscribers to one or more
12 closed intranets.

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Claims

1. A method of transferring signalling messages between an Internet Service Provider (ISP) and an exchange of a telecommunications network for the purpose of allocating and controlling circuit switched communication channels between the exchange and the ISP, the method comprising:
- routing said signalling messages via a signalling gateway which provides for conversion of messages between a first transmission protocol used in the telecommunications network and a second transmission protocol used in the network which connects the signalling gateway to the ISP; and
- for each message received at the signalling gateway from the ISP, confirming the right of that ISP to control a circuit switched communication channel identified in the message.
2. A method according to claim 1 and comprising maintaining a record at the signalling gateway of the circuit switched communication channels allocated to each ISP coupled to the signalling gateway.
3. A method according to claim 1 or 2, wherein the telecommunication network comprises a Signalling System No.7 (SS7) based signalling network which is interfaced to the ISP via the signalling gateway.
4. A method according to any one of the preceding claims, wherein the network coupling the signalling gateway to the ISP is an IP based network.
5. A method according to claim 4 when appended to claim 3, wherein the signalling gateway provides a conversion between at least the Message Transfer Part protocols of the SS7 network and the IP based protocols

enabling ISUP messages to be transferred, transparently, between the exchange and the ISP.

5 6. A method according to claim 4 or 5, wherein the ISP from which a signalling message originates is identified at the signalling gateway by virtue of the source IP address associated with the IP datagram in which the message is delivered to the gateway.

10 7. A method according to claim 3 or to any one of claims 4 to 6 when appended to claim 3, wherein each of the ISPs connected to a given signalling gateway is allocated a unique Point Code in the signalling network of the telecommunications network, Point Codes being
15 included in the header of a signalling message to indicate the destination and source of the message, and the signalling gateway screens messages received from an ISP to confirm that the source Point Codes contained therein correspond to the actual ISPs from which they
20 originated.

8. A method according to claim 3 or to any one of claims 4 to 6 when appended to claim 3, wherein the ISP
25 by virtue of the input port/device of the signalling gateway at which the message arrives.

9. Apparatus for transferring signalling messages between an Internet Service Provider (ISP) and an
30 exchange of a telecommunications network for the purpose of allocating and controlling circuit switched communication channels between the exchange and the ISP, the apparatus comprising a signalling gateway coupled between a signalling network of a telecommunications
35 network and a network connected to an Internet Service Provider (ISP) and arranged to:

convert messages between a first transmission protocol used in the telecommunications network and a second transmission protocol used in the network which connects the signalling gateway to the ISP; and

- 5 for each message received at the signalling gateway from the ISP, to confirm the right of that ISP to control a circuit switched communication channel identified in the message.

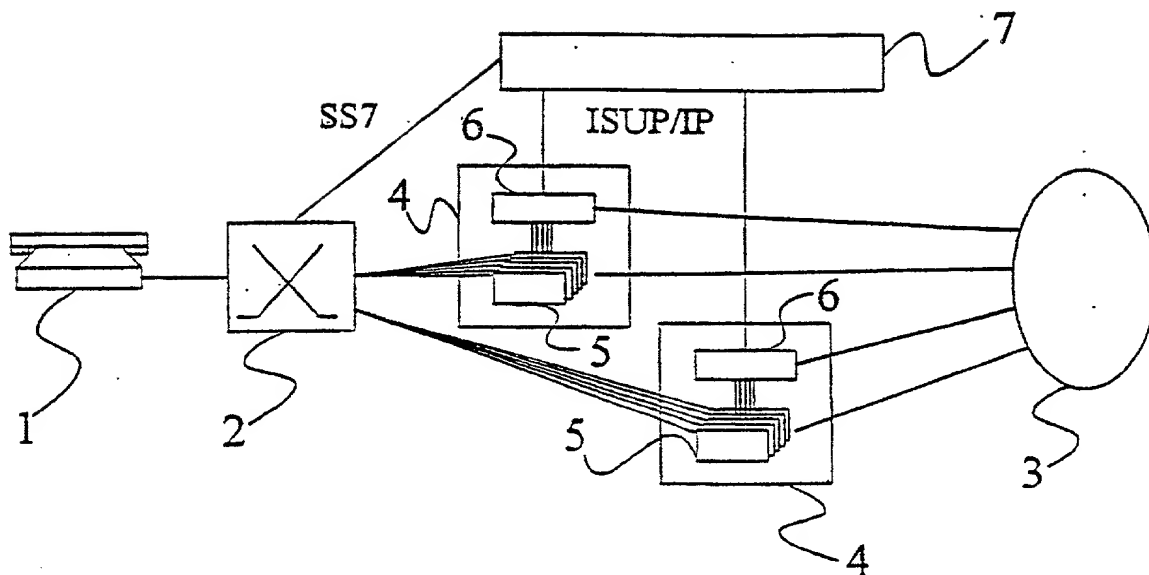


Figure 1

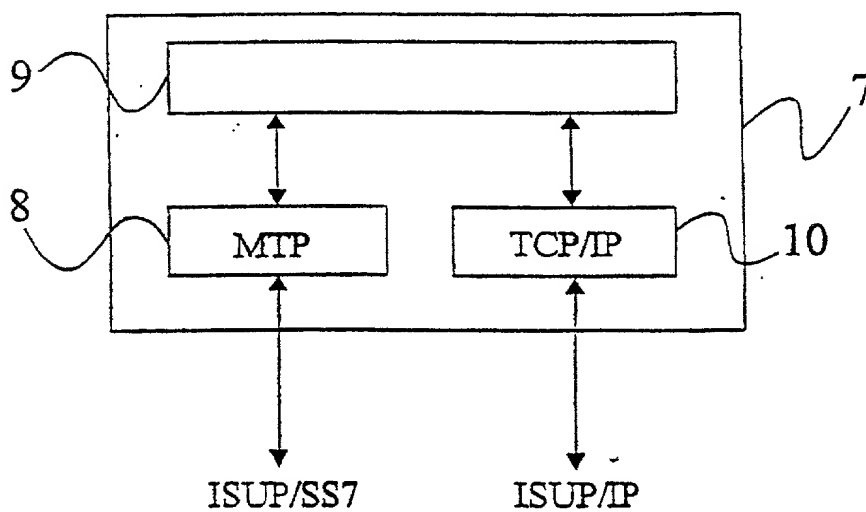
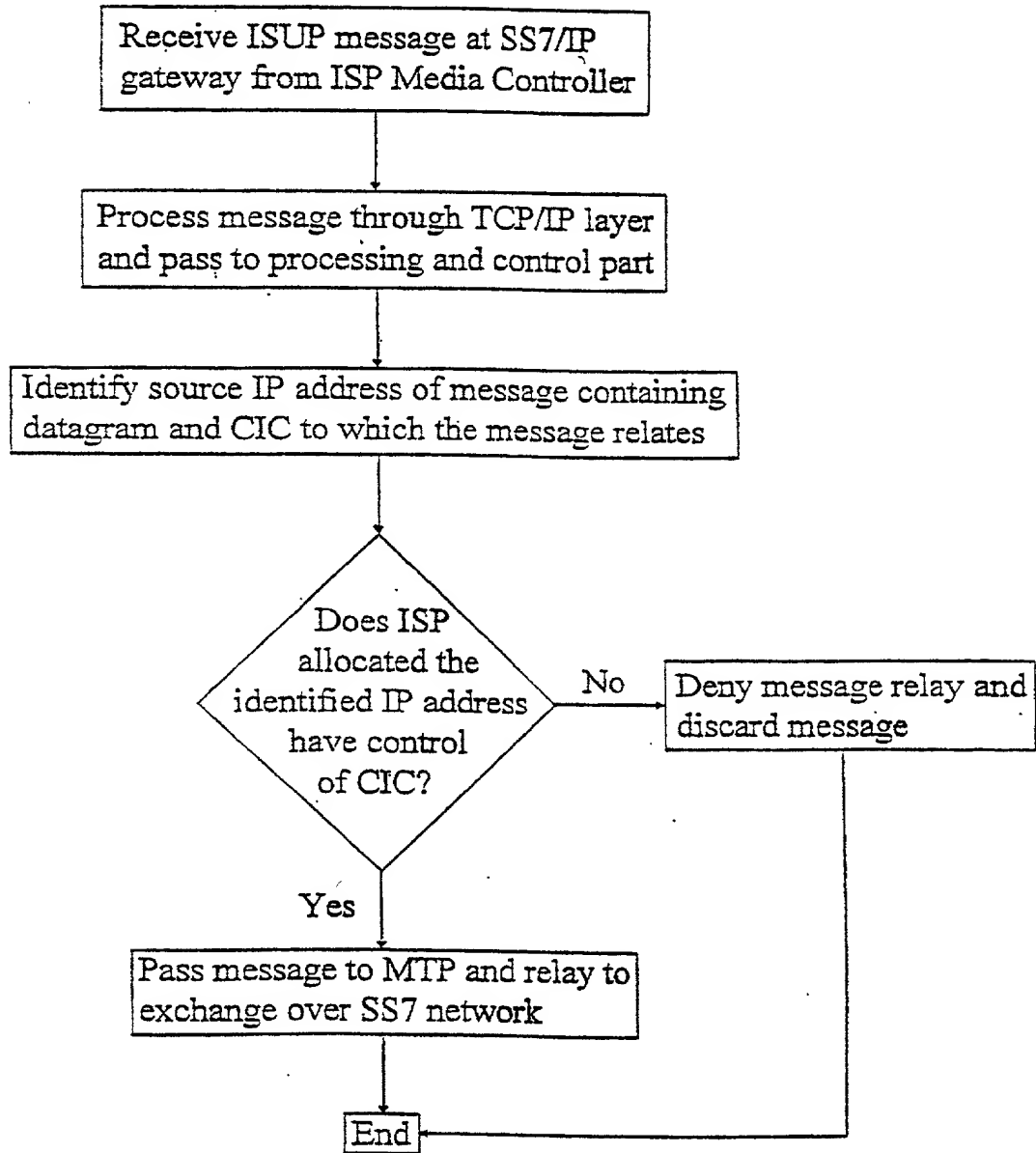


Figure 2

Figure 3

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY
(Includes Reference to Provisional and PCT International Applications)

Attorney's Docket No.

027566-028

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

SECURITY IN TELECOMMUNICATIONS NETWORK GATEWAYS

the specification of which (check only one item below):

☐ is attached hereto.

☐ was filed as United States application

Number _____

on _____

and was amended

on _____ (if applicable).

☒ was filed as PCT international application

Number PCT/EP99/08591

on 9 November 1999

and was amended

on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 (a)-(e) of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. §119:

COUNTRY (if PCT, indicate "PCT")	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 U.S.C. §119
Finland	982443	10 November 1998	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below.

(Application Number)

(Filing Date)

(Application Number)

(Filing Date)

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY (CONT'D)
(Includes Reference to Provisional and PCT International Applications)

Attorney's Docket No.

027566-028

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose to the Office all information known to me to be material to the patentability as defined in Title 37, Code of Federal Regulations §1.56, which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application:

PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. §120:

U.S. APPLICATIONS		STATUS (check one)		
U.S. APPLICATION NUMBER	U.S. FILING DATE	PATENTED	PENDING	ABANDONED
PCT APPLICATIONS DESIGNATING THE U.S.				
PCT APPLICATION NO.	PCT FILING DATE	U.S. APPLICATION NUMBERS ASSIGNED (if any)		

I hereby appoint the following attorneys and agent(s) to prosecute said application and to transact all business in the Patent and Trademark Office connected therewith and to file, prosecute and to transact all business in connection with international applications directed to said invention:

William L. Mathis	17,337	Eric H. Weisblatt	30,505	Bruce T. Wieder	33,815
Robert S. Swecker	19,885	James W. Peterson	26,057	Todd R. Walters	34,040
Platon N. Mandros	22,124	Teresa Stanek Rea	30,427	Ronni S. Jillions	31,979
Benton S. Duffett, Jr.	22,030	Robert E. Krebs	25,885	Harold R. Brown III	36,341
Norman H. Stepno	22,716	William C. Rowland	30,888	Allen R. Baum	36,086
Ronald L. Grudziecki	24,970	T. Gene Dillahunt	25,423	Steven M. duBois	35,023
Frederick G. Michaud, Jr.	26,003	Patrick C. Keane	32,858	Brian P. O'Shaughnessy	32,747
Alan E. Kopecki	25,813	B. Jefferson Boggs, Jr.	32,344	Kenneth B. Leffler	36,075
Regis E. Slutter	26,999	William H. Benz	25,952	Fred W. Hathaway	32,236
Samuel C. Miller, III	27,360	Peter K. Skiff	31,917	Wendi L. Weinstein	34,456
Robert G. Mukai	28,531	Richard J. McGrath	29,195	Mary Ann Dillahunt	34,576
George A. Hovanec, Jr.	28,223	Matthew L. Schneider	32,814		
James A. LaBarre	28,632	Michael G. Savage	32,596		
E. Joseph Gess	28,510	Gerald F. Swiss	30,113		
R. Danny Huntington	27,903	Charles F. Wieland III	33,096		



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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY (CONT'D)
(Includes Reference to Provisional and PCT International Applications)

Attorney's Docket No.

027566-028

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RESIDENCE		CITIZENSHIP	
POST OFFICE ADDRESS			
FULL NAME OF SIXTH JOINT INVENTOR, IF ANY		SIGNATURE	DATE
RESIDENCE		CITIZENSHIP	
POST OFFICE ADDRESS			
FULL NAME OF SEVENTH JOINT INVENTOR, IF ANY		SIGNATURE	DATE
RESIDENCE		CITIZENSHIP	
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FULL NAME OF EIGHTH JOINT INVENTOR, IF ANY		SIGNATURE	DATE
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